What is claimed is:

1. A hybrid device comprising:
   a sensor having a permanent magnet adjacent to a permeable pole piece and a sensor coil coupled to the pole piece providing a sensor output;
   a target for interacting with the sensor;
   an excitation means for energizing the sensor coil; and
   an output signal detector connected to the excitation means.

2. The hybrid device according to claim 1 wherein the permeable pole piece is fabricated as a cylinder, the permeable pole piece having a concentric axis.

3. The hybrid device according to claim 2 wherein the sensor coil is a spiral coil surrounding the permeable pole piece along the concentric axis of the permeable pole piece.

4. The hybrid device according to claim 1 wherein the excitation means is an inductive bridge.

5. The hybrid device according to claim 4 further comprising: a temperature compensation coil coupled across the inductive bridge.

6. The hybrid device according to claim 1 wherein the excitation apparatus is a Colpitts Oscillator.

7. The hybrid device according to claim 1 wherein the output signal detector correlates the sensor output to a target surface velocity.

8. The hybrid device according to claim 1 wherein the output signal detector correlates a sensor output to proximity between the target and the sensor.

9. The hybrid device according to claim 1 wherein the permeable pole piece is fabricated as a hollow cylinder having a concentric axis.

10. The hybrid device according to claim 9 wherein the sensor coil is a spiral coil within the permeable pole piece, the spiral coil is wound along the concentric axis of the permeable pole piece.

11. The hybrid device according to claim 9 wherein the permeable pole piece is fabricated as a caliper, the permeable pole piece having a concentric axis.

12. A hybrid device comprising:
a sensor having a permeable pole piece with a sensor coil coupled to the permeable pole piece;
a target having at least one permanent magnet for interacting with the sensor;
an excitation apparatus connected to the sensor coil; and
an output signal detector connected to the excitation apparatus for determining sensor output.

13. The hybrid device according to claim 12 wherein the permeable pole piece is fabricated as a cylinder, the permeable pole piece having a concentric axis.

14. The hybrid device according to claim 12 wherein the sensor coil is a spiral coil surrounding the permeable pole piece along the concentric axis of the permeable pole piece.

15. The hybrid device according to claim 12 wherein the excitation means is an inductive bridge.

16. The hybrid device according to claim 14 further comprising:

a temperature compensation coil coupled across the inductive bridge.

17. The hybrid device according to claim 12 wherein the excitation apparatus is a Colpitts Oscillator.

18. The hybrid device according to claim 12 wherein the output signal detector correlates the sensor output to the velocity of the at least one permanent magnet.

19. The hybrid device according to claim 12 wherein the output signal detector correlates a sensor output to proximity between the at least one permanent magnet and the sensor.

20. The hybrid device according to claim 12 wherein the permeable pole piece is fabricated as a hollow cylinder having a concentric axis.

21. The hybrid device according to claim 20 wherein the sensor coil is a spiral coil within the permeable

pole piece, the spiral coil is wound along the concentric axis of the permeable pole piece.

22. The hybrid device according to claim 12 wherein the permeable pole piece is fabricated as a caliper, the permeable pole piece having a concentric axis.

23. The hybrid device comprising:

a sensor having a permanent magnet adjacent to a permeable pole piece and a sensor coil coupled to the pole piece, the permeable pole piece is fabricated as a cylinder, the permeable pole piece having a concentric axis, the sensor coil is a spiral coil surrounding the permeable pole piece along the concentric axis of the permeable pole piece;

a target for interacting with the sensor;

an excitation apparatus connected to the sensor coil, the excitation apparatus is an inductive bridge;

a temperature compensation coil is coupled across the inductive bridge; and

an output signal detector connected to the excitation apparatus for determining sensor output, the output signal detector correlates the sensor output to a target surface velocity measurement.